

REMARKS

Claims 1-9 were pending in this application. Claims 1-9 have been amended to address the various §112 rejections, discussed below, for clarification purposes, and to correct inadvertent typographical errors. Support for these amendments may be found in paragraphs [0011], [0035], [0128]-[0129], [0141], [0180]-[0182], and [0185] in the corresponding publication (2008/0249744) of the present application. No new subject matter is believed to have been added by these amendments. No claims have been added or cancelled. Therefore, claims 1-9 remain in this application.

Specification Objections

The Abstract stands objected to for not being written in single paragraph form. Applicant has amended the Abstract, as suggested by the Examiner. The specification stands objected to for having heading sections misplaced. Applicant has amended the specification, as outlined by the Examiner. The specification stands objected to for various inadvertent spelling errors, which the Examiner has kindly listed for Applicant. Applicant has amended the specification in accordance with the Examiner's indicated required corrections.

Claim Objections

Claims 1-3 and 6 stand objected to for informalities relating to inadvertent spelling errors. Applicant believes that the above amendments to claims 1-3 and 6 address the Examiner's informality objections. Reconsideration of these objections is respectfully requested.

35 U.S.C. §112 Rejections

Claims 1-3 and 6 stand rejected under 35 U.S.C. §112, second paragraph, for indefiniteness for the reasons set forth on pages 6-7 of the Office Action.

With respect to the rejections of claim 1, the "total unknown steam amount Q_x " is usually determined by the "total receiving steam amount Q_i " and the "total necessary steam amount Q_o " ($Q_x = Q_i - Q_o$). Additionally, the combination of a sensor for the total receiving steam amount Q_i and a sensor for the total necessary steam amount Q_o may be used for determining the total unknown steam amount Q_x .

The “total improvable steam loss amount” may be defined as Q_t , $Q_{t''}$ ($= Q_t + Q_{t'}$), Q_{ts} ($= Q_t + Q_s$ or $= Q_{t''} + Q_s$), or Q_s , for example. As set forth in the specification, it is suitable that the “total improvable steam loss amount” is determined in the trap operation diagnosis (sometimes including confirmation of the trap model) and the steam leakage diagnosis, for example.

The total improvable steam loss amount is resultantly expressed by ($Q_x - Q_{xx}$). The following definitions for the variables inserted into the claims are listed in the support paragraphs identified above.

- Q_t : total trap-passed steam loss amount Q_t relating to trap defect
- $Q_{t'}$: total trap-passed steam loss amount $Q_{t'}$ relating to trap model
- $Q_{t''}$: (sum) total trap-passed steam loss amount ($Q_{t''} = Q_t + Q_{t'}$)
- Q_s : total steam leakage loss amount
- Q_{ts} : sum total steam leakage loss amount ($Q_{ts} = (Q_t + Q_s)$ or $(Q_{t''} + Q_s)$)
- Q_{xx} : total basis unknown steam amount

Applicant believes the explanation provided herein and amendment of the claims with the defined variables overcomes the indefiniteness rejections. Of note, all instances of “grasping” and derivatives thereof in claim 1 have been amended to read “determining.”

With respect to claims 2-3 and 6, Applicant has amended these claims to address the inadvertent redundancies and antecedent basis errors indicated by the Examiner.

Applicant believes that the above explanations and/or amendments with respect to claims 1-3 and 6 overcome the Examiner’s indefiniteness rejections. Reconsideration of these rejections is respectfully requested.

Double Patenting Rejection

Although Applicant believes that the amended claim 4 is distinct from claim 7 of the co-pending Application No. 10/572,760 cited by the Examiner. Applicant will address any further provisional non-statutory double patenting rejections upon indication of allowed subject matter in the present case. Moreover, claim 7 in the ‘760 application stands withdrawn in response to an Election/Restriction Requirement and will likely be cancelled

once allowable claims are identified in the '760 application. This will render the double patenting rejection moot.

35 U.S.C. §103 Rejections

Claims 1, 2, and 4 stand rejected under 35 USC § 103(a) for obviousness based upon U.S. Patent Application Publication No. 2002/0052716 to Fujiwara ("Fujiwara") in view of United States Patent Application Publication No. 2002/0153004 to Agata ("Agata"). Claim 3 stands rejected over Fujiwara in view of Agata and further in view of International Publication No. WO 02/066950 to Nagase ("Nagase"). Claims 5 and 6 stand rejected under 35 USC § 103(a) for obviousness based upon Fujiwara in view of Agata and further in view of Nagase. Claim 7 stands rejected under 35 USC § 103(a) for obviousness based upon Fujiwara alone. Claims 8 and 9 stand rejected under 35 USC § 103(a) for obviousness based upon Fujiwara in view of Nagase.

Fujiwara also discloses the aspect of determining the total improvable steam loss amount (total trap-passed steam loss amount Q_t or Q_t) that can be cancelled by predetermined facility improvements (trap replacement or trap repair), as is described in paragraphs [0002]-[0003] and [0011]-[0016] of the corresponding publication (2008/0249744) of the present application. However, Fujiwara only shows "the amount of steam loss reduction" (Q_t kg/h, for example) that can be obtained by the predetermined facility improvements. More specifically, the steam loss resulting from various causes present in the facility should naturally, and, most preferably, be zero in view of economical and energy-saving aspects. However, the steam loss occurring in the facility includes the steam loss that can be cancelled by the predetermined facility improvements and the steam loss that cannot be cancelled by the predetermined facility improvements.

The method disclosed in Fujiwara is able to provide "the amount of steam loss reduction" (i.e., the steam loss amount Q_t kg/h that can be cancelled by the predetermined facility improvements), but is unable to provide "the ratio of steam loss reduction" that can be obtained by the predetermined facility improvements.

Therefore, using the Fujiwara method, the effectiveness of the facility improvements relative to the steam loss in the facility cannot be appropriately evaluated, which would cause the owner of the facility difficulties in determining whether or not to perform the predetermined facility improvements. In contrast, in the present invention, all of

“the improvable unknown steam ratio (Kts)”, “the unknown steam loss ratio (Kx) and the improved unknown steam ratio (Kxx)”, and “the unknown steam ratio (Kx) and the apparent improved unknown steam ratio (Kxx’)” represent “the ratio of steam loss reduction” obtained by the predetermined facility improvements.

The effectiveness of the facility improvements relative to the steam loss in the facility can be appropriately evaluated by those ratio values “Kts”, “Kx and Kxx”, or “Kx and Kxx’”, which allows the owner of the facility to determine more appropriately and more easily whether or not to perform the predetermined facility improvements.

The relationships among the values or ratios are established as follows:

total unknown steam amount ($Q_x = Q_i - Q_o$) (a difference between total receiving steam amount (Q_i) and total necessary steam amount (Q_o))

= total steam loss amount resulting from various causes present in the facility.

improvable unknown steam ratio (Kts)

= the total improvable steam loss amount ($Q_x - Q_{xx}$) / total unknown steam amount (Q_x)

unknown steam ratio (Kx)

= total unknown steam amount (Q_x) / total receiving steam amount (Q_i)

improved unknown steam ratio (Kxx)

= total basis unknown steam amount (Q_{xx}) / (total receiving steam amount (Q_i) - total improvable steam loss amount ($Q_x - Q_{xx}$))

apparent improved unknown steam ratio (Kxx')

= total basis unknown steam amount (Q_{xx}) / total receiving amount (Q_i)

Agata teaches a steam amount similar to the total receiving steam amount Q_i and the total necessary steam loss amount Q_o of the present invention. However, as shown in Fig. 4, S7, Agata only establishes the control for maintaining the relationship “steam distributed \geq steam used” (total receiving steam amount $Q_i \geq$ total necessary steam amount Q_o). Therefore, Agata fails to disclose, teach, or suggest that the difference ($Q_i - Q_o$) between the total receiving steam amount Q_i and the total necessary steam amount Q_o is dealt with, as the steam loss in the facility (total unknown steam amount Q_x) is, naturally, desired to be zero.

Furthermore, Agata fails to disclose, teach, or suggest that the steam loss occurring in the facility (total unknown steam amount Q_x) includes the steam loss that can be cancelled by the predetermined facility improvements (total improvable steam loss amount ($Q_x - Q_{xx}$)) and the steam loss that cannot be cancelled by the predetermined facility improvements (total basis unknown steam amount Q_{xx}).

To summarize the prior art, Fujiwara discloses providing the improvable total trap-pass steam loss amount (Q_t'' or Q_t) that can be cancelled by the trap replacement or repair, and Nagase discloses measuring the total steam leakage loss amount Q_s by the steam leakage diagnosis. However, neither Fujiwara nor Nagase teach or suggest that the difference ($Q_i - Q_o$) between the total receiving steam amount Q_i and the total necessary steam amount Q_o is dealt with, as the steam loss in the facility (total unknown steam amount Q_x) is, naturally, desired to be zero, and that the steam loss occurring in the facility (total unknown steam amount Q_x) includes the steam loss that can be cancelled by the predetermined facility improvements (total improvable steam loss amount ($Q_x - Q_{xx}$) and the steam loss that cannot be cancelled by the predetermined facility improvements (total basis unknown steam amount Q_{xx}).

None of the cited references, either alone or in combination, discloses the use of an improvable unknown steam ratio, an unknown steam loss ratio, an improved unknown steam ratio, and an apparent improved unknown steam ratio, as set forth in the pending claims, to derive a ratio of steam loss reduction. Accordingly, the pending claims are novel and non-obvious in view of the cited prior art.

Notwithstanding the foregoing, Applicant has amended claims 1, 4-5, and 7-8 to characterize the total unknown steam amount as a total steam loss amount in the evaluation target steam piping. As discussed above, support for these amendments may be found in paragraph [0011] of the corresponding publication of the present application. This particular limitation clarifies that the difference ($Q_i - Q_o$) between the total receiving steam amount (Q_i) and the total necessary steam amount (Q_o) is dealt with as the steam loss occurring in the facility (= unknown steam amount Q_x).

For the foregoing reasons, Applicant believes that the subject matter of claims 1, 4-5, and 7-8 is not rendered obvious by the cited prior art. Claims 2-3, 6, and 9 depend from and add further limitations to these independent claims and are believed to be patentable for the reasons discussed hereinabove in connection with amended independent claims 1, 4-5, and 7-8.

CONCLUSION

Based on the foregoing amendments and remarks, reconsideration of the rejections and allowance of pending claims 1-9 are respectfully requested.

Respectfully submitted,

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